



First record of *Desmoncus* Mart. (Arecaceae) in São Paulo state, Brazil

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Abstract

Desmoncus leptoclonos Drude is recorded for the first time for the state of São Paulo, Brazil. Based on this new record, the geographical distribution of *Desmoncus* Mart. for Brazil is expanded. An identification key to climbing species of Brazilian *Desmoncus*, a description, a map of geographic distribution, photographs, and comments concerning *Desmoncus leptoclonos* are provided.

Keywords

Desmoncus leptoclonos, Parque Estadual do Morro do Diabo, semideciduous seasonal forest.

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Introduction

Arecaceae, popularly known as palms, are monocotyledons with a wide distribution, especially in tropical and subtropical areas, and are considered one of the oldest botanical families of the planet (Dransfield et al. 2008). They have approximately 2,500 species and 185 genera (The Plant List 2019). In Brazil, approximately 300 species and 37 genera are known. These are tree palms, shrubs or climbing palms (Flora do Brasil 2019).

The Neotropical climbing species of the family are concentrated in the genus *Desmoncus* Mart. which is the only Neotropical “rattan” genus (Gentry 1993). There are 10 climbing species of the genus recorded for Brazil: *D. giganteus* A.J.Hend., *D. horridus* Splitg. ex Mart.,

D. leptoclonos Drude, *D. mitis* Mart., *D. orthacanthos* Mart., *D. parvulus* Bailey, *D. polyacanthos* Mart., *D. pumilus* Trail, *D. setosus* Mart., and *D. vacivus* Bailey. They are distributed throughout the Southeast (Espírito Santo, Minas Gerais, and Rio de Janeiro), Midwest (Goiás, Mato Grosso, and Mato Grosso do Sul), Northeast (Alagoas, Bahia, Maranhão, Paraíba, Pernambuco, and Rio Grande do Norte) and North (Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, and Tocantins) regions (Flora do Brasil 2019).

Morphologically, *Desmoncus* can be identified by the presence of hooks that act as anchors or grappling hooks, known as acanthophylls, which are fundamental structures used in the climbing process of these species (Standley and Steyermark 1958). The ethnobotanical

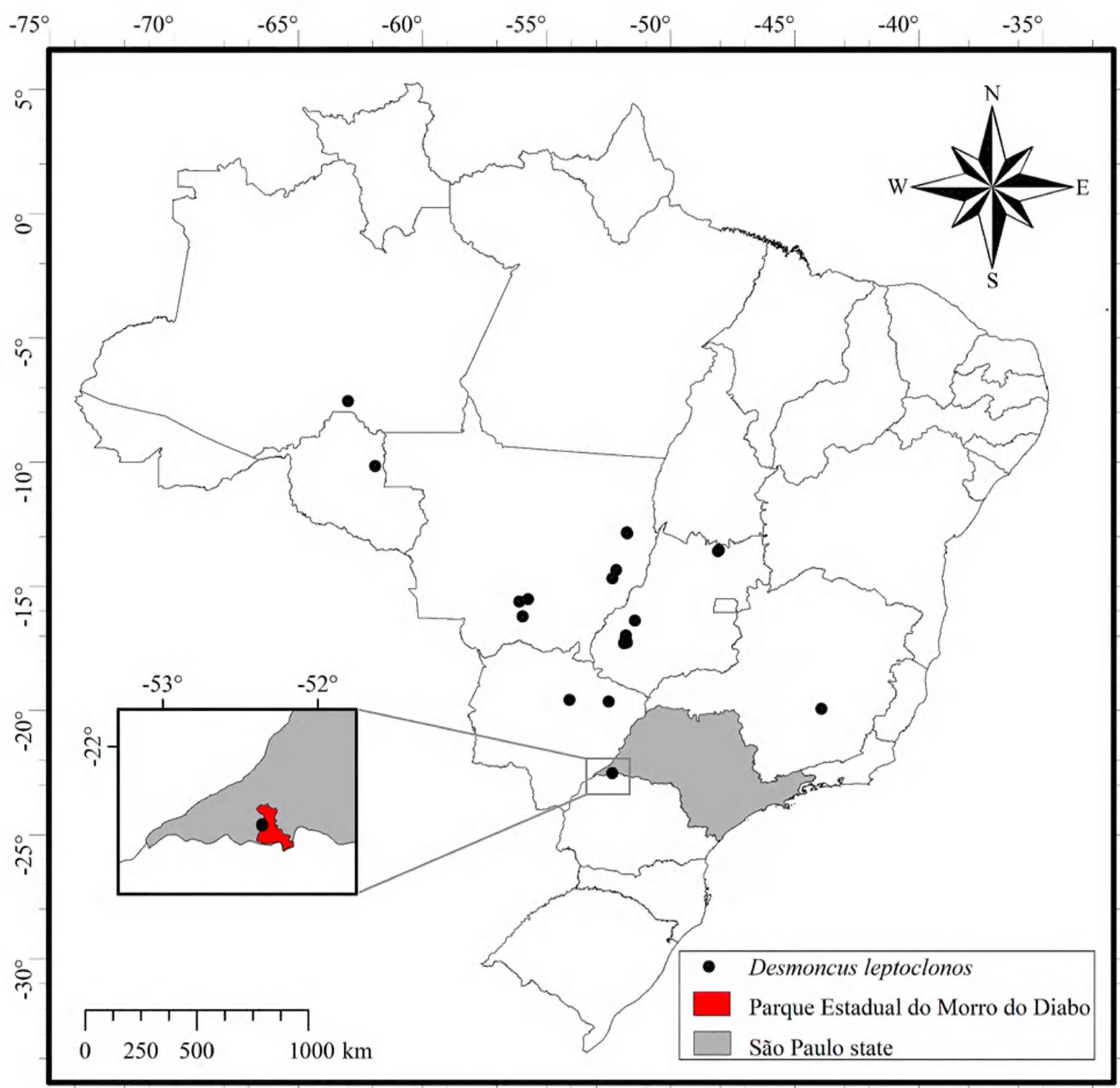


Figure 1. Distribution map of *Desmoncus leptoclonos* Drude in Brazil and location of PEMD.

importance of *Desmoncus* has been cited for indigenous communities in Peru, where they make baskets, chair backs and seats, headboard of beds, cabinet doors, and piano stools with their fibers (Henderson and Chávez 1993). The genus is poorly known morphologically and ecologically because these plants tend to be avoided by the collectors due to their spiny nature and, therefore, there are relatively few specimens in herbaria. Most herbarium specimens are sterile, because they rarely bloom (Henderson 2011).

Methods

During a floristic survey of climbing species in the Parque Estadual do Morro do Diabo (PEMD), we found the first record of *Desmoncus leptoclonos* Drude for São Paulo state. The PEMD is located in southwestern São Paulo state, within the municipality of Teodoro Sampaio (Fig. 1). The region's vegetation corresponds to

semideciduous seasonal forest, and the PEMD is the largest fragment with this vegetation type in São Paulo state, with 33,845.33 ha (Veloso et al. 1991, São Paulo 2006).

The species was identified by consulting protologue and specific references on the genus (Drude 1881, Henderson et al. 1995, Dransfield et al. 2008, Henderson 2011), analysis of herbaria specimens (NY, UB), as well as consulting type specimen images. The collected and examined specimens were deposited in the Herbarium Aassisense (HASSI). Only fully developed structures were used for the morphological description. Terms used to describe two-dimensional shapes follow Hickey (1973), those used to describe indumentum are according to Payne (1978) and inflorescence type is according to Weberling (1989). The conservation status was assessed according to IUCN criteria (IUCN 2012) and using GeoCAT (Bachmann et al. 2011) to calculate the extent of occurrence (EOO) and area of occupancy (AOO) with a cell width of 2 km.

Results

An identification key to climbing species of Brazilian *Desmoncus* is presented along with a description of *Desmoncus leptoclonos* Drude, a new record for the state of São Paulo.

Key to the species of *Desmoncus* from Brazil

1. Spines straight and cirrus without spines
 2. Leaf rachis straight
 3. Fruits large ($21.5\text{--}42.6 \times 12.7\text{--}18.3$ mm) with smooth surface and without any apparent subepidermal fibers *D. giganteus*
 3. Fruits small ($10.6\text{--}21 \times 7.4\text{--}12.4$ mm) with irregular surface and many fibers *D. horridus*
 2. Leaf rachis wavy *D. orthacanthos*
1. Spines recurved and cirrus with spines
 4. Adaxial surface of the base of the leaflets covered with spines
 5. Fruits ellipsoid and frequently with Y-shaped fibers *D. mitis*
 5. Fruits globose to obovoid and never with Y-shaped fibers
 6. Inflorescence with bracts densely tomentose and without spines (rarely with some spines); fruits large ($18.4\text{--}23.9 \times 11.1\text{--}15.3$ mm) *D. vacivus*
 6. Inflorescence with bracts not tomentose and densely recovered with vertical spines; fruits small ($8.9\text{--}14.3 \times 7.1\text{--}11.2$ mm) *D. parvulus*
 4. Adaxial surface of the base of the leaflets glabrous, with spines only in the central groove of abaxial surface
 7. Fruits globose to obovoid
 8. Fruits with irregular surface and many subepidermal fibers *D. setosus*
 8. Fruits with smooth surface and without any apparent subepidermal fibers *D. polyacanthos*
 7. Fruits ellipsoid
 9. Inflorescences with the rachis smooth, not twisted, distantly spaced and alternate rachillae; peduncular bracts without spines (rarely with a few spines); apex of the leaflets never filiform *D. pumilus*
 9. Inflorescences with the rachis angular, slightly twisted, closely spaced and spirally arranged rachillae; peduncular bracts sparsely to moderately covered with short, straight or sinuous, briefly swollen-based, diagonally or vertically oriented spines; apex of the leaflets acute to acuminate, rarely filiform *D. leptoclonos*

Desmoncus leptoclonos Drude

Figures 2, 3

New record. Brazil. São Paulo: Teodoro Sampaio, Parque Estadual do Morro do Diabo: $22^{\circ}29'57"S, 052^{\circ}21'35"W$, 279 m, 11 April 2017, Uduutsch RG 3005 (HASSI 1270); $22^{\circ}30'31"S 052^{\circ}21'32"W$, 270 m, 31 March 2018, Uduutsch RG 3006 (HASSI 1271).

Additional specimens examined. Brazil. Goiás: 86 km from Xavantina, Cachimbo road, 2 August 1967, Sidney 249 (UB 0003250); Mato Grosso: km 10 of the road between Cuiabá and Chapada de Guimarães, left side, 17 September 1998, Ferreira E. and Silva A. 518 (NY 02622902); Mato Grosso: Jaquitara, R.10, about 12 km, expedition Base Camp, by margin of small lake in lush vegetation, 27 November 1968, Harley R.M, Souza R. and Castro R. 11230 (UB 87928).

Identification. Climber, stems clustered, 1–4 m long. Leaves with spinescent sheath, spines black, 0.8–2.6 mm long, subcylindrical, straight to sinuous; petiole 1.2–4.8 cm long with spines; rachis 62–87.9 cm long, with spines recurved, usually <1 cm; cirrus with spines, 5 or 6 pairs of acanthophylls, basal acanthophylls $2.8\text{--}5.1 \times 0.1\text{--}0.4$ cm, apical acanthophylls $0.9\text{--}1.1 \times 0.1\text{--}0.2$ cm; leaflets dark green, membranaceous, alternate, 7–12 per side of the rachis, irregularly distributed, elliptical, apex acute to acuminate, rarely filiform, base cuneate, margin entire, spines sparse in the central groove on the lower surface, 0.6–2.8 cm long. Inflorescence hermaphrodite; peduncular bracts 29–37 cm long, 1.5–2 cm wide, with surfaces ribbed or ridged, brown tomentose or glabrous, sparsely to moderately covered with short, straight or sinuous, briefly swollen-based, diagonally or vertically oriented spines, spines flattened or triangular in cross-section, whitish-brown proximally, black or brown distally, with tomentose margins; peduncle brown, 18–21 cm long, spinescent, subcylindrical; rachis angular, slightly twisted, paleaceous, 17–21 cm long, closely spaced and spirally arranged rachillae; rachillae, 10–16, 3.5–10 cm long, 0.6–1.2 mm wide, glabrous or scarcely tomentose, each rachilla not or rarely with the base adnate to the rachis, subtended by an acute bracteole and with a well-developed axillary pulvinus. Flowers, stamens 6. Fruits orange or red when mature, $1\text{--}1.88 \times 0.5\text{--}0.9$ cm, ellipsoid; endocarp woody with 3 germinal pores in the medial portion, many fibers, and irregular surface.

Distribution. Paraguay and Brazil. In Brazil it can be found in the states of Goiás, Mato Grosso, Mato Grosso do Sul, Minas Gerais (Henderson 2011), Amazonas and Rondônia (Reflora - Herbário Virtual 2019, SpeciesLink System CRIA 2019), and herein recorded for the first time in the state of São Paulo (Fig. 1).

Discussion

Although there are records of *Desmoncus orthacanthos* Mart. and *D. polyacanthos* Mart. from São Paulo state



Figure 2. Vegetative structures of *Desmoncus leptoclonos* Drude. **A.** Detail of the acanthophylls. **B.** Detail of the leaf and acanthophylls. **C.** Habit. **D.** Detail of the cirrus with spines. **E.** Detail of the filiform apex of the leaflets.

(SpeciesLink System CRIA 2019), this is the first time that *D. leptoclonos* is recorded in the state. The nearest location to this new occurrence is the city of Água Clara, Mato Grosso do Sul state, 416 km away from the Parque Estadual do Morro do Diabo. Therefore, the geographical distribution of *Desmoncus* for Brazil has been expanded.

Desmoncus leptoclonos has as diagnostic characteristics: the basal acanthophylls slightly larger than the apical ones, ellipsoid fruits, some leaflets with a filiform apex and presence of scattered spines in the central groove on the lower surface. It is commonly found in wet areas in gallery forest, savannah or swamp vegetation (Henderson 2011). The species flowers in February,

August and November and fruits in January, May, August and September (SpeciesLink System CRIA 2019). In São Paulo state it fruits in March on the edge of the semideciduous seasonal forest.

According to the IUCN criteria (IUCN 2012) and using GeoCAT (Bachman et al. 2011) *D. leptoclonos* should be designated as Little Concern, considering its extent of occurrence (EOO) of nearly 1,300,000 km² in Brazil. However, if we consider its area of occupancy (AOO) of 76 km², *D. leptoclonos* should be considered Endangered, B2b(ii, iii), because of its possible threat of habitat degradation in future. This new record of *D. leptoclonos* for São Paulo state reinforces the importance of floristic surveys, mainly with non-tree species.

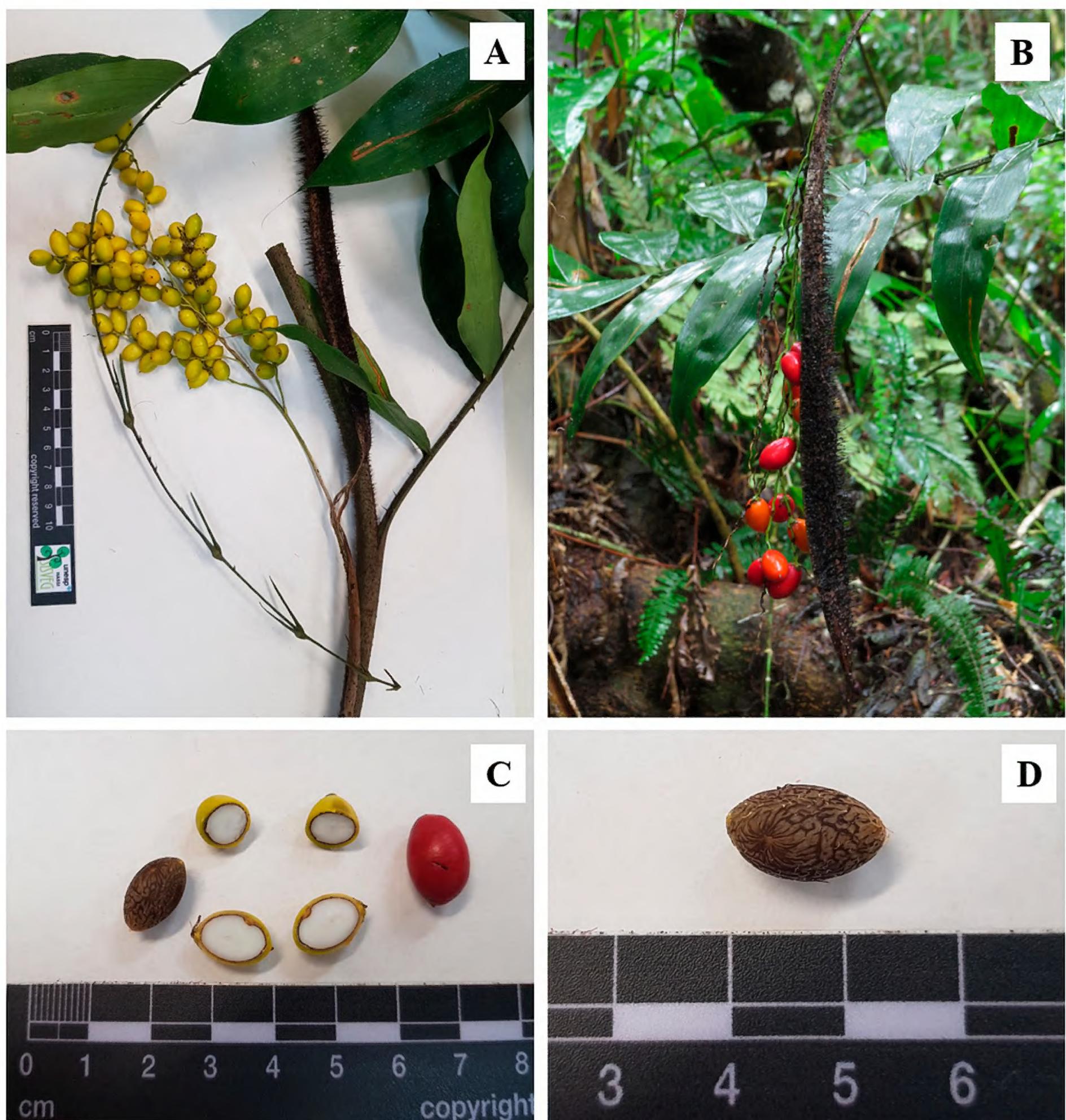


Figure 3. Reproductive structures of *Desmoncus leptoclonos* Drude. **A.** Infrutescence with the bract and acanthophylls. **B.** Infrutescence with the bract. **C.** Detail of the fruits. **D.** Detail of the numerous fibers of the endocarp.

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Authors' Contributions

TAPF, LCS, WFT, and RGU wrote the manuscript; LCS,

WFT and RGU collected the specimens; TAPF, LCS and RGU identified the specimens.

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